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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SANDEEP K. GOPISETTY, SUMANT PADBIDRI,
PRASENJIT SARKAR, CHUNG-HAO TAN,
and KALADHAR VORUGANTI

Appeal 2009-004219
Application 10/676,698
Technology Center 2100

Decided: March 1, 2010

Before LANCE LEONARD BARRY, JOHN A. JEFFERY, and CAROLYN
D. THOMAS, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-15. We have jurisdiction under 35 U.S.C. § 6(b). We affirm-in-part.

STATEMENT OF THE CASE

Appellants invented a storage area network (SAN) management system and method of providing a SAN topology. *See generally* Spec. 1 and 3.

Claim 1 is reproduced below with key disputed limitations emphasized:

1. A storage area network (SAN) management system to generate perspectives of a SAN topology, the SAN management system including:

a SAN manager program to monitor a storage area network (SAN), *said SAN manager program capable of generating an adjacency matrix*, and said SAN manager program capable of facilitating direct data transfers between storage devices without server intervention;

a SAN management database linked with the SAN manager program, wherein the SAN management database maintains information identifying devices included within the SAN and connections between the devices;

a plurality of sensor agents positioned within devices included within the SAN, wherein the sensor agents gather information associated with events occurring within the SAN and provide the gathered information to the SAN manager for inclusion within the SAN management database; and

a topology viewer linked to the SAN manager to generate a user requested topology perspective according to data included within the SAN management database and data associated with a previously requested topology perspective.

The Examiner relies on the following as evidence of unpatentability:

Battat

US 5,958,012

Sep. 28, 1999

Drew Bird, *Storage Basics: Storage Area Networks*, Feb. 26, 2002, <http://www.enterprisestorageforum.com/sans/features/article.php/981191> (hereafter “Bird”).

THE REJECTION

The Examiner rejected claims 1-15 under 35 U.S.C. § 103(a) as unpatentable over Battat and Bird.¹ Ans. 4-9.²

CLAIM GROUPING

Based on Appellants’ arguments (Br. 6-8), we treat the independent claims separately.

Claims 1-14

Claim 1 recites a SAN manager program capable of generating an adjacency matrix. The Examiner finds that Figure 17 in Battat, graphically showing nodes of a network adjacent to one another, discloses the SAN manager program capable of generating an adjacency matrix. Ans. 4.

Appellants contend that the term “adjacency matrix” recited in independent claims 1, 9, and 14 has a specific meaning related to matrix algebra as explained in the disclosure. Br. 7. Appellants argue Battat does not discuss an adjacency matrix and that Figure 17 does not show generating an adjacency matrix. Br. 8.

The issue before us, then, is as follows:

¹ While the rejection’s heading does not include Bird, the body of the rejection discusses Bird. See Ans. 4. We therefore presume that the Examiner intended to include Bird in this rejection.

² Throughout this opinion, we refer to the Appeal Brief filed December 7, 2007 and the Examiner’s Answer mailed February 15, 2008.

ISSUE

Under § 103, has the Examiner erred in rejecting claim 1 by finding that Battat and Bird collectively would have taught or suggested a SAN manager program capable of generating an adjacency matrix?

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence:

Appellants' Disclosure

1. The Specification describes a topology viewer 91 that compares adjacent nodes related to an input node with an adjacency matrix shown in Table 1. Spec. 17-18.

2. The Specification states the adjacency matrix provided in Table 1 as where:

(Let $G = (V, E)$ be a graph, where V is indexed by $\{1, 2, \dots, n\}$. The $n \times n$ adjacency matrix of G is defined by $A[v, w] = \{1 \text{ if } \{v, w\} \text{ belongs to } E, 0 \text{ otherwise}\}$ data structure (An Adjacency List is an array $\text{Adj}[1 \dots n]$ of pointer, where $\text{Adj}[u]$ points to a linked list containing the vertices v such that $\{u, v\}$ (undirected) or (u, v) (directed) is an edge. A directed graph G is represented by an adjacency matrix X such that $[a]_n$ entry $X_{p,q} = 1$ if and only if there is an edge from p to q . Otherwise $X_{p,q} = 0$) that corresponds to the SAN topology 24.

Spec. 18.

Battat

3. Battat teaches a network management system that displays a three-dimensional (3-D) virtual reality environment of a networked computer

system's components, such as computer systems, printers, network routers, and other devices. The system includes a visualization workstation 101, an object repository 102, management applications 103, and agents 104. Abst., col. 4, ll. 47-64, and col. 7, l. 60 – col. 8, l. 16; Fig. 1.

4. Battat shows a network's 3-D environment with bridges and routers. Col. 7, ll. 50-51 and col. 13, l. 51-col. 14, l. 14; Fig. 17.

PRINCIPLES OF LAW

“‘Functional’ terminology may render a claim quite broad. By its own literal terms, a claim employing such language covers any and all embodiments which perform the recited function.” *In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971).

ANALYSIS

Based on the record before us, we find error in the Examiner's obviousness rejection of claim 1 which calls for, in pertinent part, a SAN manager program capable of generating an adjacency matrix. The recitation, “capable of generating an adjacency matrix” in claim 1, is a functional limitation. Such limitations can render the scope of the claim quite broad. *See Swinehart*, 439 F.2d at 213. Nonetheless, the collective Battat/Bird SAN manager program must be able to perform the recited function of generating an adjacency matrix. *See id.*

Battat discloses a SAN management system with a SAN manager program (e.g., a management application 103). *See* FF 3. Battat further teaches a system that creates or generates a 3-D visualization of a computer network. FF 4. Thus, Battat's SAN system is capable of generating 3-D

visualizations. While Battat does not discuss or use the word “matrix,” the Examiner finds that the 3-D visualization in Figure 17 is an adjacency matrix as recited in claim 1. *See* Ans. 4. We, however, find the Examiner’s interpretation of the term “adjacency matrix” problematic.

Appellants define an adjacency matrix using mathematical conditions and show an adjacency matrix in Table 1. *See* FF 1-2. Thus, when construing this term in light of the disclosure, we agree with Appellants (Br. 7-8) that the term has a special meaning and corresponds to matrix algebra. *See In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Moreover, we find that the ordinary and customary meaning of word “matrix” to an ordinarily skilled artisan in the computer networking art relates to matrix algebra -- not a 3-D visualization. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc).

Using this understanding of the term “adjacency matrix,” Battat does not disclose or teach a SAN manager program capable of generating such an adjacency matrix. At best, Battat discloses a SAN program that generates 3-D visualizations. FF 3-4. There is no discussion in Battat that an application 103 has a program that generates an adjacency matrix with the mathematical conditions discussed in the disclosure. Nor is there evidence in Battat that demonstrates any of the applications 103 have the programming capable of performing such a function. *See* FF 3-4. We therefore find that Battat does not teach or suggest a SAN manager program capable of generating an adjacency matrix as recited in claim 1.

Moreover, Bird does not cure the deficiencies of Battat. Bird discloses the basics of SANs and has been relied upon to demonstrate that SAN manager programs that transfer data between storage devices in SAN

systems without server intervention are known by ordinarily skilled artisans.
See Ans. 4.

Independent claims 9 and 14 also recite “an adjacency matrix.” Claim 9 recites a method that includes: (1) receiving adjacent nodes and comparing them to identify nodes already included with an adjacency matrix, and (2) determining the nodes which should not be in the adjacency matrix. Claim 14 recites a SAN management system device with similar logic means for performing the above method steps. Because neither Battat nor Bird would have taught or suggested an adjacency matrix, we similarly find that the combination would not have taught nor suggested the receiving and determining limitations that involve the adjacency matrix recited in claims 9 and 14.

Lastly, since claims 2-8 and 10-13 depend from independent claims 1 and 9, we will not sustain the § 103 rejection of these claims.

For the foregoing reasons, Appellants have shown the Examiner erred in rejecting claims 1-14 based on the combination of Battat and Bird.

Claim 15

The Examiner finds that Battat and Bird teach all the limitations of independent claim 15. Ans. 9. Appellants present no separate arguments for independent claim 15. *See* Br. 6-8. Claim 15, however, does not recite an adjacency matrix. Appellants’ arguments that Battat fails to teach an adjacency matrix (*id.*) are therefore not commensurate with the scope of claim 15, and we find no error in the Examiner’s conclusion of obviousness of claim 15 based on Battat and Bird.

CONCLUSION

The Examiner has erred in rejecting claims 1-14, but has not erred in rejecting claim 15 under § 103.

ORDER

The Examiner's decision rejecting claims 1-15 is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

peb

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